



Upper Reach of the Housatonic River Engineering Evaluation/Cost Analysis Fact Sheet

General Electric Housatonic River Project Pittsfield, Massachusetts

July 2000

INTRODUCTION

This fact sheet provides an overview of the results and recommendations of the Engineering Evaluation/Cost Analysis (EE/CA). The EE/CA was performed to evaluate the potential removal actions for the Upper Reach of the Housatonic River from Lyman Street in Pittsfield, MA, to the confluence of the East and West Branches of the Housatonic River. This 1.5-mile stretch of river, referred to as the EE/CA Reach, is immediately downstream of the General Electric (GE) manufacturing facility in Pittsfield. EPA seeks public comment on this EE/CA and its supporting Administrative Record File.

CURRENT ENGINEERING EVALUATION AND COST ANALYSIS

An EE/CA is an evaluation involving a comparison of potential removal action

alternatives using the criteria of effectiveness, implementability, and cost. Through the EE/CA process, EPA evaluates alternatives for mitigating the human health and environmental threats posed by the presence of polychlorinated biphenyls (PCBs) and other hazardous substances in river sediments and banks of the EE/CA Reach.

The EE/CA presents the following information:

- A site description including summaries of previous studies.
- Identification of the removal action and habitat restoration objectives for the EE/CA Reach.
- Identification of removal action costs.
- Comparative analysis of alternatives.

EPA INVITES PUBLIC COMMENT

EPA invites public comment upon EPA's recommendations and upon the alternatives evaluated in the EE/CA. EPA will select a final removal action after considering public comments in a document called an Action Memorandum. EPA will hold a 31-day public comment period, from **July 17, 2000, through August 16, 2000**, to provide an opportunity for the public to participate in the selection of the 1.5-Mile Reach cleanup plan. During the comment period, the public is invited to review the EE/CA and its supporting Administrative Record File, which are available at the Information Repositories listed below, and to offer written or verbal comments. Pursuant to 40 CFR §300.415(n)(4)(iii), upon timely receipt of a request sent to EPA, within 2 weeks of the initiation of the comment period, the comment period will be extended by a minimum of 15 additional days.

EPA and the Massachusetts Department of Environmental Protection will conduct a public informational meeting at **7:00 p.m. on Tuesday, July 25, 2000**, to summarize the results of the EE/CA, to update the community on the investigation progress, and to answer questions about the investigations and findings. EPA will conduct a public hearing at **7:00 p.m. on Tuesday, August 15, 2000**, to accept formal verbal comments on the preferred alternative as presented in the EPA fact sheet. Both events will be held at the **Berkshire Athenaeum Public Library Auditorium**, 1 Wendell Avenue, in Pittsfield. A public informational meeting will be held in Connecticut at the Kent Town Hall in Kent on **Tuesday, August 8, 2000, at 7:00 p.m.**

The hearing will be transcribed and a copy of the transcript will be available at the Information Repositories. Interested citizens may submit written comments or offer verbal comments on the EE/CA at the hearing on August 15. While EPA uses public comments throughout site cleanup, EPA will only respond in writing to written comments submitted during the comment period or verbal comments submitted at the formal public hearing.

If you would like to comment in writing on the EE/CA, please mail your written comments (postmarked no later than **August 16, 2000**) to: Chet Janowski, Remedial Project Manager, One Congress Street, Suite 1100 (HBO), Boston, Massachusetts 02114; 617-918-1324; fax 617-918-1291; or by e-mail to janowski.chet@epa.gov.

Any general questions concerning the GE Pittsfield/Housatonic River Site should be directed to Angela Bonarrigo, EPA's Community Involvement Coordinator, at 617-918-1034.

The EE/CA and its supporting Administrative Record File will be available for public review and comment at the following locations:

EPA Records Center
1 Congress St., Suite 1100
Boston MA 02114
617-918-1440

MA DEP
436 Dwight St., Suite 500
Springfield MA 01103
413-784-1100

Lenox Public Library
18 Main St.
Lenox MA 01240
413-637-0197

Simon's Rock College of Bard
84 Alford Rd.
Great Barrington MA 01230
413-528-7370

Berkshire Athenaeum Public Library
Reference Department
1 Wendell Ave.
Pittsfield MA 01201
413-499-9488

Berkshire County Regional Planning Commission
33 Dunham Mall
Pittsfield MA 01201
413-442-1521

CT DEP (Communications)
79 Elm St.
Hartford CT 06106
860-424-4100

Kent Library
32 North Main St.
Kent CT 06757
860-927-3761

REMOVAL OBJECTIVES

The following removal action objectives were established by EPA:

- Remove, treat, and/or manage PCB-contaminated river sediments and riverbank soils to prevent human and ecological exposures exceeding risk-based levels.
- Eliminate or mitigate existing riverbank soil and sediment sources of contamination to the EE/CA Reach, prevent recontamination of previously remediated areas, and prevent downstream migration of contaminated sediments and bank soils.
- Minimize long- and short-term impacts on wetland and floodplain areas and enhance habitat in a manner consistent with the above objectives.

Cleanup Criteria—To achieve these objectives, EPA has established cleanup criteria for total PCBs in the EE/CA Reach. These criteria are

based on human and ecological exposures exceeding risk-based levels as presented in the EE/CA.

Habitat Restoration—Habitat restoration is necessary to meet applicable and relevant regulations as part of the response action and to meet the natural resource damage (NRD) objectives in accordance with the Consent Decree for the GE Pittsfield/Housatonic River Site, which was lodged in Federal District Court on October 7, 1999. Habitat restoration is also necessary to protect the regraded riverbed and riverbank from erosion.

Habitat restoration objectives will be met through a combination of regrading, revegetation, bioengineering, and potential installation of habitat improvements (e.g., low-stage dams, current deflectors, and boulders). The placement of habitat improvements and regrading will be conducted such that the flood elevations in the river are not significantly affected and flood storage is not reduced.

SITE DESCRIPTION

The Housatonic River flowed through the City of Pittsfield in its natural state until the late 1930s/early 1940s when the U.S. Army Corps of Engineers (USACE) channelized the river within the City of Pittsfield, isolating oxbows from the main river channel. From the late 1940s until approximately the 1980s, these oxbows were backfilled with various materials, including materials from the GE facility. In addition, the Massachusetts Department of Public Works undertook flood control work based on reports by USACE.

In 1903, GE initiated operations at a site on the Housatonic River in Pittsfield. Three manufacturing divisions at the GE facility (Transformer, Ordnance, and Plastics) have used areas near the site. Although GE conducted many activities at the Pittsfield facility throughout the years, the activities of the Transformer Division were the likely primary source of PCB contamination. GE's Transformer Division activities included the construction and repair of electrical transformers, some of which contained PCBs. GE manufactured and serviced electrical transformers containing PCBs at this facility from approximately 1932 through 1977.

In the late 1960s, a PCB storage tank associated with GE Building 68 collapsed and released an estimated 1,000 gallons of liquid PCBs to the riverbank, surface water, and sediments. Visual contamination, including trap rock and sediments, was removed following the release; however, subsequent investigations in this area identified additional material, including dense nonaqueous phase liquid (DNAPL), that was not removed during the immediate response action or was the possible result of other spills.

Additional releases of PCBs to the environment included spills at the GE facility onto the ground

resulting in contamination of soil (some of which was used as fill at the facility and at off-site areas throughout Pittsfield), surface water runoff to Silver Lake and the river, and groundwater.

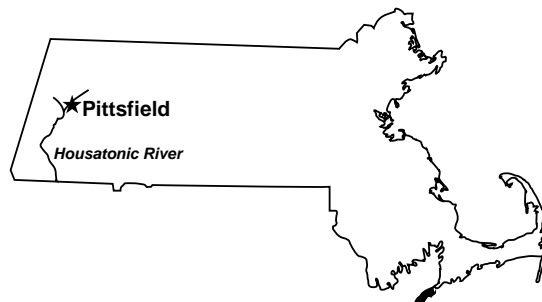


Figure 1: Location of Pittsfield and the Housatonic River

PREVIOUS SITE INVESTIGATIONS

Numerous studies have been conducted on the Housatonic River including studies of sediment, soil, fish tissue, and benthic organisms collected from the river. These studies indicate that PCB contamination exists in the river from the outfall of Unkamet Brook (upstream of the EE/CA Reach) to the Massachusetts-Connecticut state line and beyond. The sources of contamination include the GE facility; the 0.5-mile stretch of river immediately upstream of the EE/CA Reach (known as the Removal Reach); Silver Lake, which discharges into the river in the EE/CA Reach; and former oxbow areas A, B, and C, which abut the river in the EE/CA Reach.

The U.S. Environmental Protection Agency (EPA) has determined that a removal action is needed to address unacceptable risks or threats to human health and ecological receptors in the Upper Reach of the Housatonic River. This determination was documented in the 26 May 1998 Combined Action and EE/CA Approval Memorandum (Action Memorandum).

SCREENING OF TECHNOLOGIES

Numerous technologies to contain, remove, and/or treat the PCB contamination were identified and screened in the EE/CA. Technologies were considered for the following response actions:

- River diversion.
- Sediment and riverbank soil removal.

- In situ treatment and containment.
- Ex situ treatment.
- Ex situ containment/disposal.

The technologies considered for each response action were evaluated with respect to the criteria of implementability, effectiveness, and cost, as identified in the *EPA Guidance on Conducting Non-Time-Critical Removal Actions under CERCLA*.

REMOVAL ALTERNATIVES

Three base alternatives for the removal of contaminated soil and sediment were developed for detailed analysis:

- **Base Alternative 1, Wet Excavation**—This alternative involves the removal of contaminated material from the river without river diversion.
- **Base Alternative 2, Dry Excavation: Sheetpiling (except in cobble reaches where Pumping Bypass will be used)**—This alternative involves removal of contaminated material from dewatered (dry) portions of the river using river diversion.
- **Base Alternative 3, Dry Excavation: Pumping Bypass for the Entire EE/CA Reach**—This alternative is the same as Base Alternative 2, except that diversion of the river would occur by pumping river flow around removal areas.

DISPOSAL ALTERNATIVES

Four disposal alternatives for excavated soil and sediment (Disposal Options A through D) were developed and evaluated.

- **Disposal Option A (Consolidation at GE with Disposal of Excess at Off-Site Facilities)**—Excavated material will be staged, based on pre-construction sampling data, as either non-RCRA-regulated, TSCA-regulated, or RCRA-regulated waste. TSCA- and RCRA-regulated waste (approximately 14,900 yd³) and approximately 35,100 yd³ of non-RCRA/non-TSCA regulated waste will be disposed of at the GE On-Plant Consolidation Areas. The remaining waste soils, estimated at 43,400 yd³, will be sent to an off-site disposal facility. The estimated cost of Disposal Option A is \$13.1 million.
- **Disposal Option B (Off-Site Disposal of All Excavated Material)**—This alternative is effective and implementable. The estimated cost of Disposal Option B is \$29.0 million.
- **Disposal Options C (Thermal Desorption Treatment with Off-Site Disposal) and D (Solvent Extraction Treatment with Off-Site Disposal)**—These disposal options would be conducted on GE's plant site. Both treatment processes are effective and implementable for

the removal of organic constituents from soil. Potential hazards associated with these treatment processes (e.g., chemical exposure or air emissions) can be minimized by managerial and engineered controls. The estimated costs of Options C and D are respectively \$55.3 million and \$44.4 million.

RECOMMENDED ALTERNATIVE

The recommended alternative consists of a modified Base Alternative 2, Sheetpiling and Pumping Bypass, along with Disposal Option A. The recommended alternative was chosen based on what EPA believes to be the most effective and efficient approach to remediation in the EE/CA Reach.

In addition to the recommended alternative, it is proposed to allow the removal Contractor or EPA the flexibility to adjust field operations to take advantage of the Contractor's capabilities and experience as well as experience gained in observing the removal action in the Upper Reach 0.5-Mile Removal currently being performed by GE. One of the other excavation alternatives approved in the EE/CA could be implemented in instances where the Contractor can show, after EPA approval, that this alternative is a more effective and efficient approach to remediation.

The following subsections provide details on implementing the recommended alternative in specific subreaches of the EE/CA Reach.

Lyman Street to North of Elm Street (Transect 64 to Transect 96): Sheetpiling

Beginning at the Lyman Street Bridge, sheetpiling would be installed from Transect 64 downstream to Transect 96 (Figure 2). Because sheetpiling cannot be installed under the Lyman Street Bridge, wet excavation, with in-stream diversion, is proposed for under the bridge.

Sheetpiling is proposed for this section primarily because the river abuts Oxbows A, B, and C. These oxbows were filled in with material from the GE plant site and are contaminated with PCBs. GE is required under the Consent Decree to further characterize the extent of contamination in these oxbows. Based on conditions encountered during the removal activities in the Upper Reach 0.5-Mile Removal, an unexpected source of nonaqueous phase liquid (NAPL) could be encountered.

EPA believes that sheetpiling will provide better excavation control in the smaller cells if NAPL is found. If further bank sampling, currently in progress, determines that encountering NAPL is unlikely, then pumping bypass will be an allowed alternative. However, if the additional sampling indicates the possible presence of NAPL, then additional excavation may be necessary. The need for additional excavation and associated costs will be addressed in the final Action Memorandum.

North of Elm Street to North of Pomeroy Avenue (Transect 96 to Transect 168): Pumping Bypass

Pumping bypass is recommended from Transect 96 to Transect 168 (Figure 2), because it is the alternative that best accommodates the difficult conditions of this portion of the EE/CA Reach. From Transect 96 to the Elm Street Bridge, the factors that make it difficult to install sheetpiling or to use wet excavation are the steep slopes, the water depth, and the location of homes and businesses in this area.

In the section of river below the Elm Street Bridge to about Transect 154 (the cobble reach), sheetpile installation would not be possible because of the steep slopes, rapid river flow, and shallow depth to bedrock.

From Transect 154 to Transect 168, the river consists of residential properties on both sides. Sheetpiling is not recommended between these transects because of the limited access. Access requirements for pumping bypass are less than for sheetpiling and, therefore, will result in slightly less impact to the residents. Although wet excavation is possible for this section, this option presents a greater risk of allowing sediments to migrate downstream.

North of Pomeroy Avenue to the Confluence of the East and West Branches (Transect 168 to Confluence): Sheetpiling

Sheetpiling is recommended from Transect 168 to the confluence with the West Branch, except under the Pomeroy Avenue Bridge where wet excavation will be used (Figure 2). Bypass pumping could also be used in this section, including under the Pomeroy Avenue Bridge. However, the discharge for the bypass pump operation will have to be constructed below the confluence with or in the West Branch of the Housatonic River.

Wet excavation is not recommended below Transect 168 because water depth begins to increase, making the depth of excavation and sediment movement more difficult to control. The proximity to the confluence also presents a potential problem in trying to contain any movement of fines within the EE/CA Reach during the removal activities.

Disposal Recommendation

Disposal Option A is recommended. In addition, to reduce the volume of material sent to an off-site disposal facility, EPA recommends that an evaluation be performed to determine whether the sediments removed from the cobble reach can be screened effectively and efficiently to remove the cobbles (stone larger than 2 inches in diameter). The cobbles then can be mechanically cleaned or power washed and returned to the river. This could reduce the volume of soils sent off-site by as much as 5,000 yd³ or even more. The screening operation could also be used during excavation in other parts of the streambed if significant amounts of cobble are found.

Disposal Options B, C, and D are not recommended due mainly to higher costs and the availability of on-plant consolidation space at the GE facility.

The estimated cost for the recommended alternative is \$40.7 million. This cost includes a base alternative cost of \$27.6 million and an Option A disposal cost of \$13.1 million. In accordance with the Action Memorandum Guidance Document (OSWER Directive 9360.3-01), these costs will be increased in the final Action Memorandum by 20% for contingency costs (\$8.1 million) as well as an adjustment for EPA costs (\$1.5 million). Costs in the final Action Memorandum may be further increased based on the results of the supplemental investigations and upon any NAPL response actions.

The recommended remedy will take approximately 3 to 5 years to complete based on observations of progress on the first 0.5-mile reach and depending on weather conditions and unanticipated field conditions. Work on the 1.5-mile reach cannot begin until GE has completed excavation in the 0.5-mile reach, which is currently projected for June 2001.

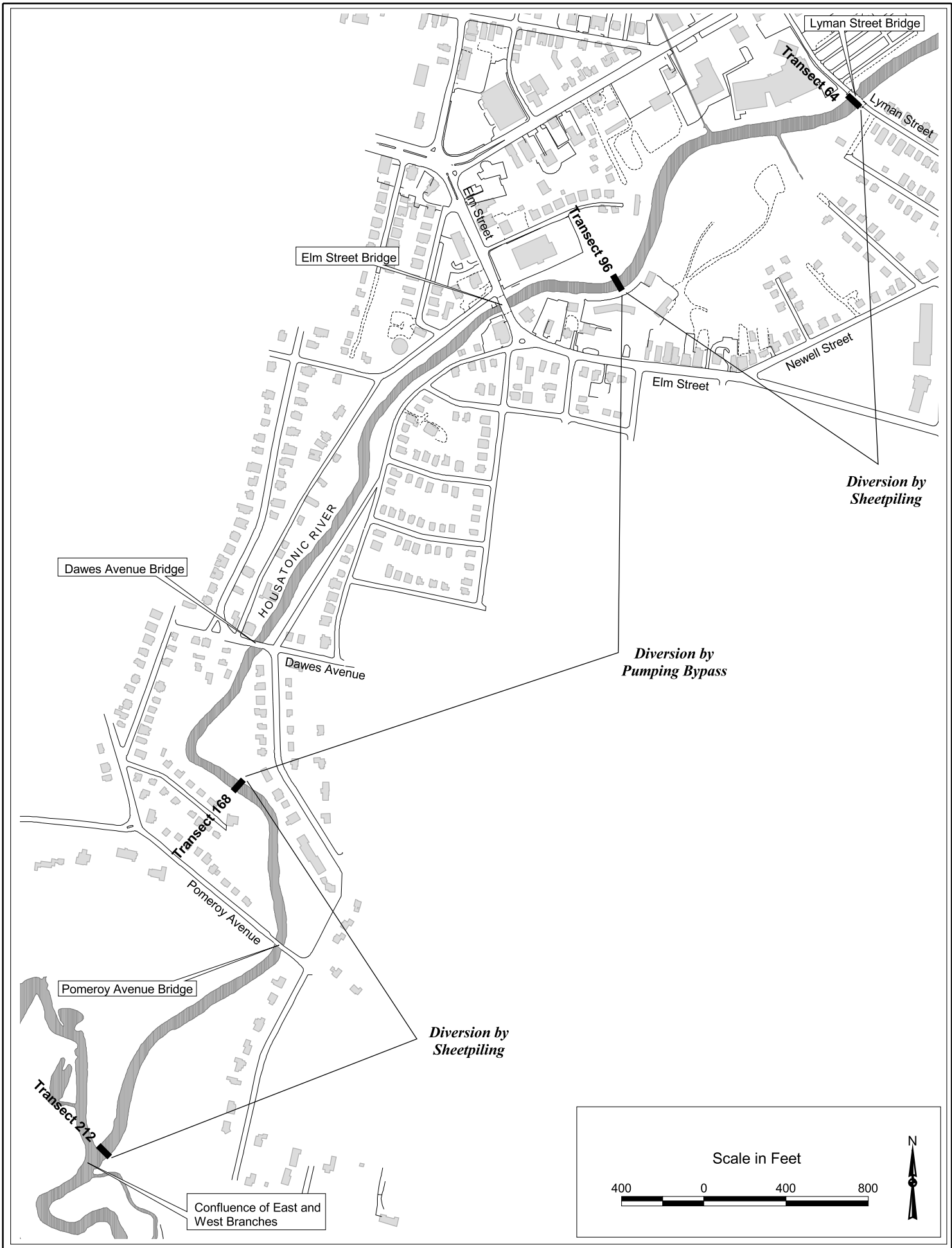


FIGURE 2 - RECOMMENDED REMOVAL ALTERNATIVE